

CLAIMS

I claim:

1) 1). A method, comprising:

performing parameterization on three-dimensional graphics model geometric data;

performing scalar quantization on the three-dimensional graphics model geometric data;

encoding the three-dimensional graphics model geometric data differentially;

and

generating coded and compressed three-dimensional graphics model geometric data.

2). The method of claim 1, wherein the three-dimensional graphics model geometric data includes normalized normal vectors.

3). The method of claim 2, wherein performing parameterization further comprises mapping the normalized normal vectors into actual spherical coordinate values.

4). The method of claim 3, wherein performing scalar quantization further comprises generating actual quantized spherical coordinate values.

5). The method of claim 4, wherein encoding the three-dimensional graphics model geometric data differentially further comprises:
generating predicted quantized spherical coordinate values from at least one actual previously quantized spherical coordinate value; and
generating error values by subtracting the predicted quantized spherical coordinate values from the actual quantized spherical coordinate values.

means for generating predicted quantized spherical coordinate values from at least one actual previously quantized spherical coordinate value; and means for generating error values by subtracting the predicted quantized spherical coordinate values from the actual quantized spherical coordinate values.

13). The system of claim 12, further comprising means for encoding the error values using entropy encoding.

14). The system of claim 13, wherein the coded and compressed data is Motion Pictures Experts Group 4, 3 Dimension Model Coded (MPEG4 3DMC).

15). A computer-readable medium having stored thereon a plurality of instructions, said plurality of instructions when executed by a computer, cause said computer to perform:

- performing parameterization on three-dimensional graphics model geometric data;
- performing scalar quantization on the three-dimensional graphics model geometric data;
- encoding the three-dimensional graphics model geometric data differentially;
- and
- generating coded and compressed three-dimensional graphics model geometric data.

16). The computer-readable medium of claim 15 having stored thereon additional instructions, said additional instructions when executed by a computer, cause said computer to further perform normalizing normal vectors from the three-dimensional graphics model geometric data.

1 17). The computer-readable medium of claim 16 having stored thereon
 2 additional instructions, said additional instructions when executed by a
 3 computer for performing parameterization, cause said computer to further
 4 perform mapping the normalized normal vectors into actual spherical
 5 coordinate values.

1 18). The computer-readable medium of claim 16 having stored thereon
 2 additional instructions, said additional instructions when executed by a
 3 computer for performing quantization, cause said computer to further perform
 4 generating actual quantized spherical coordinate values

1 19). The computer-readable medium of claim 18 having stored thereon
 2 additional instructions, said additional instructions when executed by a
 3 computer for encoding the three-dimensional graphics model geometric data
 4 differentially, cause said computer to further perform:
 5 generating predicted quantized spherical coordinate values from at least one
 6 actual previously quantized spherical coordinate value; and
 7 generating error values by subtracting the predicted quantized spherical
 8 coordinate values from the actual quantized spherical coordinate values.

1 20). The computer-readable medium of claim 19 having stored thereon
 2 additional instructions, said additional instructions when executed by a
 3 computer, cause said computer to further perform encoding the error values
 4 using entropy encoding.

1 21). The computer-readable medium of claim 20, wherein the coded and
 2 compressed data is Motion Pictures Experts Group 4, 3 Dimension Model
 3 Coded (MPEG4 3DMC).

- 1 22). A system, comprising:
2 a parameterized normal encoder comprising,
3 a processor, wherein the processor performs scalar quantization and
4 parameterization on three-dimensional graphics model geometric data;
5 and
6 a storage device connected to the processor for storing instructions
7 executed by the processor;
8 a predictor connected to the parameterized normal encoder; and
9 an entropy encoder connected to the predictor; wherein the system
10 generates coded and compressed three-dimensional graphics model
11 geometric data.
- 1 23). The system of claim 22, wherein the three-dimensional graphics model
2 geometric data includes normalized normal vectors.
- 1 24). The system of claim 23, wherein the processor maps the normalized
2 normal vectors into actual spherical coordinate values and quantizes the
3 actual spherical coordinate values into actual quantized spherical coordinate
4 values.
- 1 25). The system of claim 24, wherein the predictor generates predicted
2 quantized spherical coordinate values from at least one actual previously
3 quantized spherical coordinate value.
- 1 26). The system of claim 25, wherein the processor generates error values by
2 subtracting the predicted quantized spherical coordinate values from the
3 actual previously quantized spherical coordinate values.

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1 27). The system of claim 25, wherein the entropy encoder encodes the error
2 values using entropy encoding.

1 28). The system of claim 27, wherein the coded and compressed data is
2 Motion Pictures Experts Group 4, 3 Dimension Model Coded (MPEG4
3 3DMC).

1 29). A method, comprising:
2 generating actual quantized spherical coordinate values by adding error
3 values to predicted quantized spherical coordinate values;
4 performing deparameterization and scalar dequantization on the actual
5 quantized spherical coordinate values; and
6 generating decompressed three-dimensional graphics model geometric data
7 from the dequantized spherical coordinate values.

1 30). The method of claim 29, wherein performing deparameterization and
2 scalar dequantization further comprises mapping spherical coordinate values
3 into decoded, dequantized, unnormalized normal vectors.

1 31). The method of claim 30, further comprising decoding compressed three-
2 dimensional graphics model geometric data using entropy decoding, wherein
3 the compressed three-dimensional graphics model geometric data contains
4 error values.

1 32). The method of claim 31, wherein generating actual quantized spherical
2 coordinate values further comprises:
3 adding error values to the predicted quantized spherical coordinate values to
4 generate the actual quantized spherical coordinate values.

